

### Wisconsin Department of Natural Resources Drinking Water & Groundwater Quality Standards/Advisory Levels

The following tables, **Table I - Drinking Water & Groundwater Quality Health Standards/Advisory Levels** and **Table II - Drinking Water & Groundwater Quality Public Welfare/Secondary Standards**, list the Wisconsin NR 140 public health or welfare related groundwater quality Enforcement Standard (ES), NR 809 drinking water Maximum Contaminant Level (MCL) or Secondary Standard, or lifetime Health Advisory Level (HAL) established by the Wisconsin Dept. of Health Services (WI DHS) or the United States Environmental Protection Agency (US EPA) for contaminants in groundwater and drinking water.

NR 140 health and welfare based ESs, and NR 809 MCLs are enforceable standards established to protect public health and welfare by limiting the levels of contaminants in groundwater and drinking water. NR 809 Secondary Standards are guidelines established to address cosmetic and aesthetic effects of substances present in drinking water supplies. HALs established by the WI DHS or the US EPA serve as technical guidance to assist regulators with water consumption advisories and groundwater remediation decisions.

**Resources:** ch. NR 140, Wis. Adm. Code, is available at: <http://www.legis.state.wi.us/rsb/code/nr/nr140.pdf>; ch. NR 809, Wis. Adm. Code, is available at: <http://www.legis.state.wi.us/rsb/code/nr/nr809.pdf>; current US EPA lifetime Health Advisory Levels are published in the *2006 Edition of the Drinking Water Standards and Health Advisories* document available at <http://www.epa.gov/waterscience/criteria/drinking/dwstandards.pdf>; additional information is available for some of the substances in the table below at: the Agency for Toxic Substances and Disease Registry (ATSDR) web site at <http://www.atsdr.cdc.gov/index.html>, the US EPA Integrated Risk Information System (IRIS) web site at <http://cfpub.epa.gov/ncea/iris/index.cfm> and the US EPA Office of Ground Water & Drinking Water (OGWDW) web site at <http://www.epa.gov/safewater/contaminants/index>.

**Note:** NR 140 also contains a lower set of groundwater quality standards called Preventive Action Limits (PALs). NR 140 PALs serve as indicators of potential contamination problems and are also the limits at which response actions under NR 140 may be required. PAL values for public health and welfare related substances are listed in Tables 1 and 2 in NR 140.

**Contact Information:** For more information on WI DNR Drinking Water & Groundwater Quality Standards/Advisories Tables, or questions related to lifetime health advisory levels, contact: Bill Phelps, (608) 267-7619, [william.phelps@wisconsin.gov](mailto:william.phelps@wisconsin.gov)

**Table I - Drinking Water & Groundwater Quality Health Standards/Advisory Levels**

<u>Substance</u>	<u>CAS Registry Number</u>	<u>NR 140 Public Health ES (ug/L - except as noted)</u>	<u>NR 809 MCL (ug/L - except as noted)</u>	<u>WI DHS/US EPA Lifetime HAL (ug/L - except as noted)</u>		<u>US EPA/IARC Cancer Class/Group</u>
Acetone	67-64-1	1 mg/L				D
Acifluorfen (sodium)	62476-59-9			1	DHS	L/N
Acrylamide	79-06-1		TT <sup>c</sup>			B2
Alachlor	15972-60-8	2	2			B2
Alachlor ethane sulfonic acid (Alachlor-ESA)	142363-53-9	20				-
Aldicarb	116-06-3	10			EPA	D
Aldicarb Sulfone	1646-88-4			7 <sup>a</sup>	EPA	D
Aldicarb Sulfoxide	1646-87-3			7 <sup>a</sup>	EPA	D

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Aluminum	7429-90-5			180 DHS	-
Ametryn	834-12-8			60 EPA	D
2-Amino-4,6-dinitrotoluene	35572-78-2			1 DHS	-
Ammonia nitrogen	7664-41-7			2.3 mg/L DHS	D
Ammonium sulfamate	7773-06-0			2 mg/L EPA	D
Anthracene	120-12-7	3 mg/L			D
Antimony	7440-36-0	6	6		D
Arsenic	7440-38-2	10	10		A
Asbestos	77641-59-9	7 MFL	7 MFL		A <sup>e</sup>
Atrazine, total chlorinated residues <sup>f</sup>	multiple	3	3		N
Bacteria, Total Coliform	-	0			-
Barium	7440-39-3	2 mg/L	2 mg/L		N
Bayelton	43121-43-3			25 DHS	-
Baygon	114-26-1			3 EPA	C
Bentazon	25057-89-0	300			E
Benzene	71-43-2	5	5		H
Benzo(b)fluoranthene	205-99-2	0.2			B2
Benzo[g,h,i]perylene	191-24-2			30 DHS	D
Benzoic acid	65-85-0			40 mg/L DHS	-
Benzo(a)pyrene	50-32-8	0.2	0.2		B2
Beryllium	7440-41-7	4	4		B1
Beta particle and photon activity	-		4 millirem/yr		A
Bis-2-Chloroisopropyl ether	39638-32-9			300 EPA	-
Boron	7440-42-8	960			I
Bromacil	314-40-9			70 EPA	C
Bromate	7789-38-0		10		B2
Bromochloromethane	74-97-5			90 EPA	D
Bromodichloromethane	75-27-4	0.6	80 total *		L
Bromoform (Tribromomethane)	75-25-2	4.4	80 total *		L
Bromomethane	74-83-9	10			D
Butylate	2008-41-5	400			D
Cadmium	7440-43-9	5	5		D
Carbaryl	63-25-2	960			L
Carbofuran	1563-66-2	40	40		N

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Carbon disulfide	75-15-0	1 mg/L			-
Carbon tetrachloride	56-23-5	5	5		B2
Carboxin	5234-68-4			700 EPA	D
Chloramben	133-90-4	150			D
Chloramine (Monochloramine)	10599-90-3			3.0 mg/L EPA	Group 3
Chlordane	57-74-9	2	2		B2
Chlorine	7782-50-5			4 mg/L EPA	D
Chlorine dioxide	10049-04-4			800 EPA	D
Chlorite	7758-19-2		1 mg/L		D
Chloroethane (Ethyl chloride)	75-00-3	400			Group 3
Chloroform (Trichloromethane)	67-66-3	6	80 total *		L/N
Chloromethane	74-87-3	3			D
2-Chlorophenol	95-57-8			40 EPA	D
Ortho-Chlorotoluene (2-Chlorotoluene)	95-49-8			100 EPA	D
Para-Chlorotoluene (4-Chlorotoluene)	106-43-4			100 EPA	D
Chlorpyrifos	2921-88-2			2 EPA	D
Chromium	7440-47-3	100	100 (total)		D
Chrysene	218-01-9	0.2			B2
Clomazone (Dimethazone)	81777-89-1			430 DHS	-
Cobalt	7440-48-4	40			Group 2B
Copper	7440-50-8	1.3 mg/L	1.3 mg/L (TTAL <sup>d</sup> )		D
Cyanazine	21725-46-2	1			-
Cyanide (as free Cyanide)	57-12-5	200	200		D
Dacthal (DCPA)	1861-32-1	70			C
Dalapon	75-99-0		200		D
Diazinon	333-41-5			1 EPA	E
Dibromoacetic acid (Dibromoacetate)	10024-50-7		60 total **		-
Dibromochloromethane	124-48-1	60	80 total *		S
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.2		B2
1,2-Dibromoethane (Ethylene dibromide/EDB)	106-93-4	0.05	0.05		L
Dibutyl phthalate	84-74-2	100			D
Dicamba	1918-00-9	300			N
Dichloroacetic acid	76-43-6		60 total **		L

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1,2-Dichlorobenzene (o-Dichlorobenzene)	95-50-1	600	600			D
1,3-Dichlorobenzene (m-Dichlorobenzene)	541-73-1	1.25 mg/L				D
1,4-Dichlorobenzene (p-Dichlorobenzene)	106-46-7	75	75			C
Dichlorodifluoromethane	75-71-8	1 mg/L				D
1,1-Dichloroethane	75-34-3	850				C
1,2-Dichloroethane	107-06-2	5	5			D
1,1-Dichloroethylene	75-35-4	7	7			S
1,2-Dichloroethylene (cis)	156-59-2	70	70			D
1,2-Dichloroethylene (trans)	156-60-5	100	100			D
2,4-Dichlorophenol	120-83-2			20	EPA	E
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	70			D
1,2-Dichloropropane	78-87-5	5	5			B2
1,3-Dichloropropene (cis/trans)	542-75-6	0.2				L
Dicofol	115-32-2			1	DHS	Group 3
Di (2-ethylhexyl) adipate	103-23-1		400			C
Di (2-ethylhexyl) phthalate	117-81-7	6	6			B2
Diisopropyl methylphosphonate	1445-75-6			600	EPA	D
Dimethrin	70-38-2			2 mg/L	EPA	D
Dimethoate	60-51-5	2				C
Dimethyl methylphosphonate	756-79-6			100	EPA	C
1,3-Dinitrobenzene	99-65-0			1	EPA	D
2,4-Dinitrotoluene	121-14-2	0.05				B2
2,6-Dinitrotoluene	606-20-2	0.05				B2
Dinitrotoluene (DNT), Total Residues	-			0.05	DHS	-
Dinoseb	88-85-7	7	7			D
Dioxin (2,3,7,8-TCDD)	1746-01-6	0.00003	0.00003			B2
Dioxins and Furans (Non 2,3,7,8)	-			2,3,7,8-TCDD <sup>b</sup>	DHS	-
Diphenamid	957-51-7			200	EPA	D
Diquat	85-00-7		20			E
Disulfoton	298-04-4			0.7	EPA	E
1,4-Dithiane	505-29-3			80	EPA	D
Endothall	145-73-3		100			N
Endrin	72-20-8	2	2			D
Eocine (Eosine OJ)	17372-87-1			5 mg/L	DHS	-

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Epichlorohydrin	106-89-8		TT <sup>c</sup>			B2
EPTC (Eptam)	759-94-4	250				-
Ethylbenzene	100-41-4	700	700			D
Ethylene glycol	107-21-1	7 mg/L				D
Fenamiphos	22224-92-6			0.7	EPA	E
Fluometuron	2164-17-2			90	EPA	D
Fluoranthene	206-44-0	400				D
Fluorene	86-73-7	400				D
Fluoride	16984-48-8	4 mg/L	4 mg/L			-
Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	3.49 mg/L				D
Fonofos	944-22-9			90	EPA	N
Formaldehyde	50-00-0	1 mg/L				B1
Glyphosate	1071-83-6		700			D
Gross alpha particle activity	-		15 pCi/L			A
Heptachlor	76-44-8	0.4	0.4			B2
Heptachlor epoxide	1024-57-3	0.2	0.2			B2
Hexachlorobenzene	118-74-1	1	1			B2
Hexachlorocyclopentadiene (HCCPD)	77-47-4		50			N
Hexachloroethane	67-72-1			1	EPA	C
n-Hexane	110-54-3	600				I
2-Hexanone	591-78-6			100	DHS	-
Hexazinone	51235-04-2			400	EPA	D
HMX	2691-41-0			400	EPA	D
Hydrogen sulfide	7783-06-4	30				-
Indeno[1,2,3-CD]Pyrene	193-39-5			0.03	DHS	B2
Isophorone	78-59-1			100	EPA	C
Isopropyl methyl phosphonate	5514-35-2			700	EPA	D
Isopropanol (Isopropyl alcohol)	67-63-0			3 mg/L	DHS	Group 3
Lead	7439-92-1	15	15 (TTAL <sup>d</sup> )			B2
Lindane (Gamma-hexachlorocyclohexane)	58-89-9	0.2	0.2			S
Malathion	121-75-5			100	EPA	D
Maleic hydrazide	123-33-1			4 mg/L	EPA	D
MCPA (2-Methyl-4-chlorophenoxyacetic acid)	94-74-6			30	EPA	N

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Manganese	7439-96-5			300 EPA	D
Mercury	7439-97-6	2	2		D
Methacrylonitrile	126-98-7			1 DHS	-
Methanol	67-56-1	5 mg/L		200 EPA	E
Methomyl	16752-77-5	5 mg/L			-
Methoxychlor	72-43-5	40	40		D
Methylene chloride (Dichloromethane)	75-09-2	5	5		B2
Methyl ethyl ketone (MEK)	78-93-3	460			D
Methyl isobutyl ketone (MIBK)	108-10-1	500			D
Methyl parathion	298-00-0			1 EPA	N
4-Methylphenol (p-Cresol)	106-44-5			50 DHS	C
Methyl tert-butyl ether (MTBE)	1634-04-4	60			Group 3
Metolachlor	51218-45-2	15			C
Metribuzin	21087-64-9	250			D
Molybdenum	7439-98-7	40			D
Monobromoacetic acid (Bromoacetic acid)	79-08-3		60 total **		-
Monochloroacetic acid	79-11-8		60 total **	70 EPA	I
Monochlorobenzene (Chlorobenzene)	108-90-7	100	100		D
Monuron	150-68-5			120 DHS	Group 3
Naphthalene	91-20-3	100			I
Nickel	7440-02-0	100	100		Group 2B
Nitrate (as N)	14797-55-8	10 mg/L	10 mg/L		-
Nitrate + Nitrite (as N)		10 mg/L	10 mg/L		-
Nitrite (as N)	14797-65-0	1 mg/L	1 mg/L		-
Nitrobenzene	98-95-3			0.35 DHS	D
Nitroguanidine	556-88-7			700 EPA	D
p-Nitrophenol	100-02-7			60 EPA	D
N-Nitrosodiphenylamine (NDPA)	86-30-6	7			B2
m-Nitrotoluene (3-Nitrotoluene)	99-08-1			200 DHS	Group 3
o-Nitrotoluene (2-Nitrotoluene)	88-72-2			0.15 DHS	Group 3
p-Nitrotoluene (4-Nitrotoluene)	99-99-0			2 DHS	Group 3
Oxamyl (Vydate)	23135-22-0		200		N
Paraquat	4685-14-7			30 EPA	C
Pentachlorophenol (PCP)	87-86-5	1	1		B2

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Phenol	108-95-2	6 mg/L				D
Phloxine B	18472-87-2			1.25 mg/L	DHS	-
Picloram	1918-02-1	500	500			D
Polychlorinated biphenyls (PCBs)	1336-36-3	0.03	0.5			B2
Prometon	1610-18-0	90				D
Propazine	139-40-2			100	EPA	N
Propham	122-42-9			100	EPA	D
Propylene glycol	57-55-6			25 mg/L	DHS	-
Pyrene	129-00-0	250				D
Pyridine	110-86-1	10				Group 3
Radium 226 + 228, Combined	7440-14-4		5 pCi/L			A
RDX	121-82-4			2	EPA	C
Selenium	7782-49-2	50	50			D
Silver	7440-22-4	50				D
Simazine	122-34-9	4	4			N
Strontium	7440-24-6			4 mg/L	EPA	D
Styrene	100-42-5	100	100			C
Tebuthiuron	34014-18-1			500	EPA	D
Terbacil	5902-51-2			90	EPA	E
Terbufos	13071-79-9			0.4	EPA	D
1,1,1,2-Tetrachloroethane	630-20-6	70				C
1,1,2,2-Tetrachloroethane	79-34-5	0.2				C
Tetrachloroethylene (PCE)	127-18-4	5	5			Group 2A
Tetrahydrofuran	109-99-9	50				-
Thallium	7440-28-0	2	2			-
Toluene	108-88-3	1 mg/L	1 mg/L			I
Toxaphene	8001-35-2	3	3			B2
Trichloroacetic acid	76-03-9		60 total **	20	EPA	S
1,2,4-Trichlorobenzene	120-82-1	70	70			D
1,3,5-Trichlorobenzene	108-70-3			40	EPA	D
1,1,1-Trichloroethane	71-55-6	200	200			D
1,1,2-Trichloroethane	79-00-5	5	5			C
Trichloroethylene (TCE)	79-01-6	5	5			B2
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP)	93-72-1	50	50			D

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2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	93-76-5			70 DHS	D
1,2,3-Trichloropropane	96-18-4	60			Group 2A
1,1,2-Trifluorotrchloroethane (CFC-113)	76-13-1			5.5 mg/L DHS	-
Trifluralin	1582-09-8	7.5			C
Trimethylbenzenes (1,2,4- + 1,3,5- combined)	-	480			D
Trinitroglycerol (Nitroglycerin)	55-63-0			5 EPA	-
2,4,6-Trinitrotoluene	118-96-7			2 EPA	C
Turpentine	8006-64-2			100 DHS	-
Uranium	7440-61-1		30	40 pCi/L DHS	A
Vanadium	7440-62-2	30			-
Vinyl chloride	75-01-4	0.2	0.2		H
White phosphorous	7723-14-0			0.1 EPA	D
Xylenes (Total; m-, o-, p- combined)	1330-20-7	10 mg/L	10 mg/L		I
Zinc	7440-66-6			2 mg/L EPA	I

CAS Registry Number = Chemical Abstracts Service (CAS) Registry Number

NR 140 Public Health ES = s. NR 140.10, Wis. Adm. Code, public health related groundwater quality Enforcement Standard (ES)

NR 809 MCL = ch. NR 809, Wis. Adm. Code, Maximum Contaminant Level (MCL)

WI DHS/US EPA Lifetime HAL = United States Environmental Protection Agency (US EPA) or Wisconsin Dept. of Health Services (WI DHS) established lifetime health advisory level (HAL)

US EPA/IARC Cancer Class/Group = United States Environmental Protection Agency (US EPA) or International Agency for Research on Cancer (IARC) cancer classification or group

**Footnotes:**

\* the MCL for total trihalomethanes (TTHM) = 80 ug/L

\*\* the MCL for Haloacetic Acids (five)/HAA5 (sum of the concentrations of monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid and dibromoacetic acid) = 60 ug/L

<sup>a</sup> Federal MCL for any combination of two or more of Aldicarb, Aldicarb Sulfone and Aldicarb Sulfoxide should not exceed 7ug/L

<sup>b</sup> compare detected concentrations of "non-2,3,7,8 Dioxins and Furans" to the NR 140 groundwater quality standard for 2,3,7,8-TCDD multiplied by established toxicity equivalency factor (TEF) for that specific Dioxin or Furan congener

<sup>c</sup> TT = treatment techniques, in accordance with s. NR 809.26(5), Wis. Adm. Code

<sup>d</sup> TTAL = treatment technique action level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow

<sup>e</sup> carcinogenicity based on inhalation exposure

<sup>f</sup> Atrazine, total chlorinated residue includes atrazine and its metabolites: diaminoatrazine, diethylatrazine and deisopropylatrazine



**Units:**

ug/L = micrograms per liter  
mg/L = milligrams per liter  
MFL = million fibers per liter (fibers > 10 microns length)  
pCi/L = picocuries per liter  
millirem/year = millirem radiation dose per year

**US EPA Cancer Classification:**

**H** = Carcinogenic to humans  
**L** = Likely to be carcinogenic to humans  
**L/N** = Likely to be carcinogenic above a specified dose but not likely to be carcinogenic below that dose  
**S** = Suggestive evidence of carcinogenic potential  
**I** = Inadequate information to assess carcinogenic potential  
**N** = Not likely to be carcinogenic to humans

**US EPA Cancer Group:**

**A** = Human carcinogen  
**B1** = Probable human carcinogen: limited human evidence  
**B2** = Probable human carcinogen: sufficient evidence in animals and inadequate or no evidence in humans  
**C** = Possible human carcinogen  
**D** = Not classifiable as to human carcinogenicity  
**E** = Evidence of noncarcinogenicity for humans

**International Agency for Research on Cancer (IARC) Cancer Classification:**

**Group 1** = Carcinogenic to humans  
**Group 2A** = Probably carcinogenic to humans  
**Group 2B** = Possibly carcinogenic to humans  
**Group 3** = Not classifiable as to carcinogenicity to humans  
**Group 4** = Probably not carcinogenic to humans

**Table II - Drinking Water & Groundwater Quality Public Welfare/Secondary Standards**

<u>Substance</u>	<u>CAS Registry Number</u>	<u>NR 140 Public Welfare ES (ug/L - except as noted)</u>	<u>NR 809 Secondary Standard (ug/L - except as noted)</u>
Aluminum	7429-90-5		50 to 200
Chloride	7647-14-5	250 mg/L	250 mg/L
Color	-	15 color units	15 color units
Copper	7440-50-8		1.0 mg/L
Corrosivity	-		Noncorrosive
Fluoride	7681-49-4		2.0 mg/L
Foaming Agents MBAS <sup>#</sup> (Methylene-Blue Active Substances)	-	500	500
Hydrogen Sulfide	7783-06-4		Not Detectable
Iron	7439-89-6	300	300
Manganese	7439-96-5	50	50
Odor	-	3 TON	3 TON
Silver	7440-22-4		100
Sulfate	7757-82-6	250 mg/L	250 mg/L
Total Residue <sup>##</sup>	-		500 mg/L
Zinc	7440-66-6	5 mg/L	5 mg/L

CAS Registry Number = Chemical Abstracts Service (CAS) Registry Number

NR 140 Public Welfare ES = s. NR 140.12, Wis. Adm. Code, public welfare related groundwater quality Enforcement Standard (ES)

NR 809 Secondary Standard = s. NR 809.60, Wis. Adm. Code, secondary inorganic chemical or physical standard established for substances which may adversely affect the cosmetic or aesthetic quality of drinking water

**Footnotes:**

<sup>#</sup> Foaming Agents (MBAS) = measure of the concentration of anionic surfactants [Methylene-Blue Active Substances (MBAS)] in water utilizing the Methylene Blue Test

<sup>##</sup> Total Residue = measure of total dissolved solids (TDS) concentration

**Units:**

ug/L = micrograms per liter

mg/L = milligrams per liter

color units = color units on standard cobalt scale

TON = Threshold Odor Number (TON), measure of dilution factor required before odor is minimally perceptible





















